

THE TACHIGALIA ANTS

By WILLIAM MORTON WHEELER

The early botanists Aublet (1775) and Spruce (1869, 1908), who first observed and collected *Tachigalia* in the forests of the Guianas and adjacent regions mentioned ants as inhabiting the swollen petioles but made no effort to have the species identified. As we have seen, Aublet coined the name of the plant from "tachi," the general native-name for the stinging ants of the genus *Pseudomyrma*. The white settlers of British Guiana call them "long John ants," but since the term "long John" is applied to the trees of the genus *Triplaris*, the "palo santo" of the Latin Americans, I have been unable to ascertain whether the name of the tree is derived from that of the ant or *vice versa*, for the tree is very tall and slender and the ants which inhabit its cavities are long and narrow. "Tachi," which is also used by the natives of Brazil for various species of *Pseudomyrma*, would seem to be the best name to introduce into the vernacular for all the species of *Pseudomyrma*.

For more precise knowledge of the ant-fauna of *Tachigalia* we are indebted to Ule (1907), who carefully collected the ants of this and many other myrmecophytes and turned them over to Forel to describe. In 1904 the eminent Swiss myrmecologist published a comprehensive paper on Ule's material, comprising ants from various species of the following genera of myrmecophytes: *Tococa*, *Maieta*, *Pseudocatopsis*, *Triplaris*, *Sapium*, *Cordia*, *Coussapoa*, *Duroia*, *Tachigalia*, *Platymischium*, *Pterocarpus*, *Pterocladon*, *Schwartzia* and a peculiar *Polypodium*-like fern. He described, however, only two ants from *Tachigalia*, *Pseudomyrma latinoda* Mayr subsp. *tachigaliæ*, from the petioles and flower-bearing branches of *Tachigalia formicarum* Harms (Plate I.), collected by Ule at Tarapoto, Amazonas, and *Azteca tachigaliæ* from the petioles of an undetermined *Tachigalia* from Cerro de Escaler, in the mountains of Peru. Forel (1906) also recorded the *Ps. tachigaliæ* from the upper Rio Purus, Amazonas

(A. Goeldi and Huber). In 1912 he added *Ps. latinoda* var. *endophyta* from the Rio Ariramba, near the Rio Trombetas, Amazonas, basing the variety on specimens taken by A. Ducke in an unidentified *Tachigalia*. Stitz in 1912 records two additional ants taken by Ule in *Tachigalia* petioles: *Ps. picta* Stitz from Alto Acre, Brazil, and *Azteca brevicornis* Mayr from Rio Branco, Sierra de Maivasy, Brazil. I have been unable to find any other records of *Tachigalia* ants in the literature. Strangely enough, none of the five forms cited above occurs in the trees at Kartabo, but instead, the following forms, 28 in number, half of them belonging to new species, subspecies and varieties. I have no doubt that I could have greatly increased the number of species, had I been able to examine *Tachigalias* in other parts of British Guiana, or even in the Bartica District, had I been able to prolong my stay.

SUBFAMILY PONERINÆ.

1.—*Ectatomma tuberculatum* (Oliver).

This large, rather sluggish, yellow-brown ant, the well-known "kelep," which Dr. O. F. Cook several years ago attempted to introduce into Texas from Guatemala for the purpose of preying on the cotton-boll weevil, was occasionally seen resting on the terminal shoots of young *Tachigalias* along the Puruni trail at Kartabo. It evidently feeds on the honey-dew of the Membracids, but more frequently it visits other plants, and especially the conspicuous saucer-shaped nectaries on the petioles at the junction of the leaflets of various species of *Inga*.

2.—*Neoponera unidentata* (Mayr).

A single dealated female founding a colony in a *Tachigalia* petiole. This species nests normally in the hollow twigs of various other trees.

3.—*Neoponera crenata* (Roger).

A single dealated female founding a colony in a *Tachigalia* petiole. This species nests in the hollow twigs of other trees. It is very common at Kartabo.

SUBFAMILY PSEUDOMYRMINÆ.

4.—*Pseudomyrma damnosa* sp. nov.

(Fig. 13, a-c)

Worker. Length: 4.5-5 mm.

Head about one-quarter longer than broad, subrectangular, slightly narrower in front than behind, with feebly and evenly convex sides, and straight or very feebly convex posterior border, somewhat flattened above, in profile about three-fifths as high as long. Eyes rather small, only as long as their distance from the anterior border of the head, feebly convex. Mandibles stout, evenly convex, with two large apical and two or three indistinct basal teeth. Clypeus small and very short, convex but scarcely carinate in the middle, depressed on the sides, its anterior border very feebly sinuate in the middle, more strongly on each side. Frontal carinæ straight, subparallel, closely approximated, extending back to a line joining the anterior orbits. Antennæ short and rather slender; scapes scarcely incrassated apically, scarcely more than a third as long as the head, their tips reaching only to the anterior third of the inner orbits; first funicular joint longer than broad, constricted basally; joints 2-8 twice as broad as long, 9 and 10 somewhat longer in proportion to their width; terminal joint as long as the two preceding together. Thorax rather robust, shaped much as in *latinoda* Mayr and *arboris-sanctæ* Emery; pronotum with the neck as long as broad, evenly rounded above, concave on the sides but the dorsal surface not marginate laterally. Mesonotum flattened, broader than long, its anterior border strongly arcuate, its posterior border nearly straight. Mesoëpinotal constriction deep and abrupt. Epinotum longer than broad, a little broader in front than behind, in profile with the base horizontal and on a level with the pro- and mesonotum, distinctly longer than the sloping declivity, into which it passes through an even curve. Petiole from above subtriangular, about one and one-half times as long as broad, with straight sides; in profile about half again as long as high; the dorsal outline in profile concave anteriorly, the node evenly rounded and convex above, abruptly truncated behind; ventrally the surface is nearly straight, at its anterior end with a strong, compressed, acuminate tooth, directed downward but

not backward. Postpetiole from above twice as broad as the petiole, nearly twice as broad as long, very convex above, but strongly narrowed and constricted anteriorly where it bears on the ventral surface an acute downwardly directed projection, smaller than that on the petiole; middle of the ventral surface strongly protuberant. Gaster elongate; sting long. Legs rather slender.

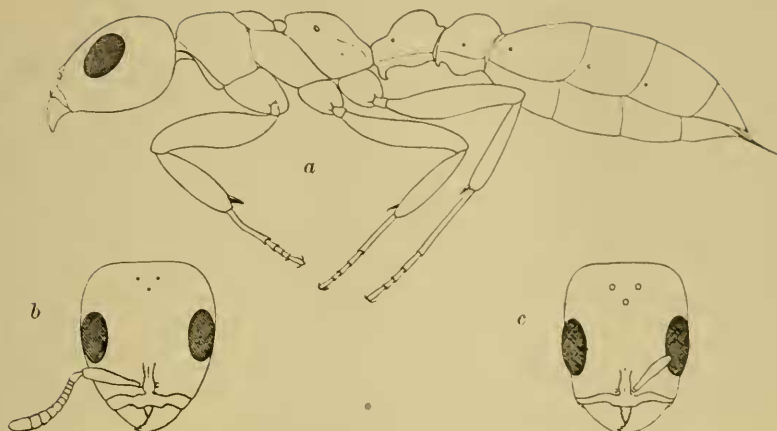
Smooth and shining, especially the head, which is very sparsely punctate; on the thorax the punctures are smaller and somewhat denser, and the gaster is very finely and superficially punctate and therefore appears somewhat less shining than the head and pronotum. Mandibles at their tips very finely striate and with coarse, elongate punctures; cheeks and pleuræ finely and superficially punctate.

Hairs sparse, golden yellow, erect or suberect on all parts of the body, rather short on the whole, longest on the petiole. Pubescence fine, distinct on the gaster, postpetiole, petiole, pleuræ, tarsi, tibiæ, funiculi and gula, not concealing the surface but rendering it somewhat less shining.

Brownish yellow; mandibles reddish brown, with black teeth; ocellar region, sutures of thorax, petiole, postpetiole, a patch on the center of each segment of the venter, the mesopleuræ, the femora, except their bases and tips and sometimes portions of the tibiæ, varying from pale to dark brown or blackish, clypeus and adjoining portions of head pale, clear yellow.

Female. Length: 7.5-9 mm.

Resembling the worker, but the head longer, with less convex sides and somewhat larger and more convex eyes and ocelli. Mandibles convex as in the worker, their external borders not geniculate at the base. Thorax rather long, in the region of the wing-insertions scarcely as broad as the head. Mesonotum rather convex, as long as broad. Epinotum sloping, the base one and one-half times as long as the declivity, which is even more abrupt than in the worker. Petiole and postpetiole somewhat longer in proportion to their width. Wings narrow and rather short, only 6.5 mm. long.

FIG. 13. *PSEUDOMYRMA DAMNOSA* SP. NOV.

a, worker in lateral view; *b*, head of same from above; *c*, head of female from above.

Head less shining, the fine punctures anteriorly and the larger punctures on the vertex deeper and more conspicuous. Gastric segments with large scattered punctures.

Hairs and pubescence much as in the worker but the pubescence decidedly longer and more dilute, so that the gaster appears more shining.

Color yellow, like the worker, but with more numerous and more extensive spots. There is a brown spot on the middle of the pronotum anteriorly, one on the mesonotum posteriorly, the sides of the thorax have an irregular brown pattern, the petiole is sometimes entirely brown, more often with the surface of the node yellow; the ventral and anterodorsal portion of the postpetiole, a broad band on each gastric segment above and a large spot on each ventral sclerite, dark brown. All the femora and the middle and hind tibiae, except their tips and bases, are also dark brown. In some specimens the dorsal banding of the gaster is more indistinct, in others the gaster may be described as dark brown with yellow posterior borders to the segments, less frequently the dark brown spot on the mesonotum becomes a Y with its branches extending to the anterior border of the sclerite. The scutellum and postscutellum are usually dark brown throughout. Wings pale fuscous, iridescent, with dark brown veins and pterostigma.

Male. Length: 5.5-6 mm.

Head through the eyes as broad as long, narrowed behind, with broadly concave posterior border; eyes and ocelli large; cheeks very short; mandibles well developed, with two larger apical and several indistinct basal teeth. Clypeus advanced and convex in the middle, its anterior border deeply sinuate on each side. Antennæ short; scapes twice as long as broad; first funicular joint as long as broad; joints 2-10 about twice as long as broad, terminal joint longer. Thorax shaped much as in the female, but the epinotum evenly rounded and sloping, without distinct base and declivity. Petiole and postpetiole like those of the worker but their ventral teeth are smaller. Gaster broadened, or clavate at the tip. Legs slender.

Surface of body less shining and less distinctly punctate than in the worker.

Pilosity and pubescence as in the female but less abundant.

Color of a duller brownish yellow; mandibles not darker; posterior portion of head, large spots on pleuræ, a large spot at the anterior end of the pronotum, lateral borders and a Y-shaped spot on the mesonotum, the epinotum, except its disc, the petiole, postpetiole and gastric segments, except the anterior and posterior border of each segment, the femora and tibiæ, except their tips and bases and the anterior tibiæ, dark brown. Venter yellowish, at least posteriorly; tips of genitalia infuscated. Wings colored as in the female.

Described from numerous specimens taken at Kartabo and the Penal Settlement, in the petioles of large specimens of *Tachigalia* growing in the sun.

This species is very closely related to *Ps. latinoda* Mayr and *arboris-sanctæ* Emery. The worker differs from that of the former, however, in its longer head, smaller and more flattened eyes, more approximated frontal carinæ and smoother and more shining surface. The var. *nigrescens* Mayr of *latinoda* approaches *damnosa* more closely, to judge from three workers from Pará received from Forel. The form described as var. *tachigaliæ* Forel, of which I possess a couple of cotypes, is much

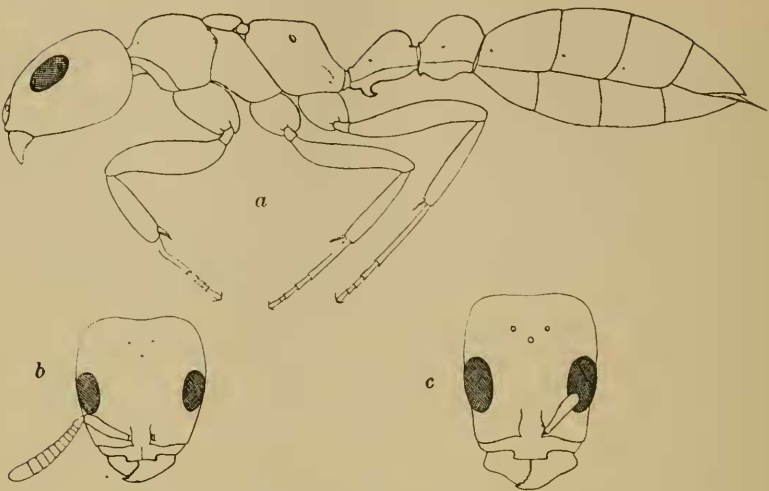
more opaque, more brownish, with longer head and antennæ, larger eyes, more slender thorax, much more angular epinotum and feebler pilosity. The var. *endophyta* Forel resembles *damnosa* in coloration, but the description is very brief. In *arboris-sanctæ* the body and eyes are larger, the antennæ decidedly longer, the petiolar node more strongly truncated behind, with submarginate sides, the postpetiole is smaller and narrower, the color uniformly brownish yellow. *Ps. damnosa* is also closely related to *dendroica* Forel, but this form is larger, with a different sculpture and color, a different petiole, etc. Stitz's *Ps. picta*, too, is an allied form but, to judge from his figure, has very large eyes and a very different thorax, petiole and postpetiole. It is certain, nevertheless, that all the forms mentioned—*damnosa*, *latinoda*, *arboris-sanctæ*, *dendroica* and *picta*—as well as *triplaridis* Forel and the species *maligna*, described below, constitute a peculiar group of very closely related tachs confined to living myrmecophytes. One might regard the whole complex as a single highly variable species, but in the present state of our knowledge it is advisable not to indulge in too much "lumping" in the genus *Pseudomyrma*.

5.—*Pseudomyrma maligna* sp. nov.

(Fig. 14 a-c)

Worker. Length: 4-4.6 mm.

Very similar to the preceding species but slightly smaller, head somewhat broader and shorter, eyes distinctly smaller, less elongate and more flattened; ocelli smaller and further apart; mandibles more flattened with less curved external borders, frontal carinæ less approximated, antennal scapes shorter and more incrassated towards their tips. Clypeus sharply carinate, depressed on the sides, its anterior border emarginate laterally, produced in the middle as a short, transverse lobe, with feebly concave margin and sharp corners. Thorax shorter and more robust than in *damnosa*; pronotum broader, more convex on the sides and above; mesoëpinotal impression shorter but quite as deep; epinotum decidedly shorter, the base from above subhexagonal, broader behind than in front, and almost marginate on the sides, more flattened, appearing straight in profile, the declivity of the same length and forming with the base a more

FIG. 14. *PSEUDOMYRMA MALIGNA* SP. NOV.

a, worker in lateral view; *b*, head of same from above; *c*, head of female.

distinct angle. Petiole shorter, only one and one-half times as long as broad, the node more rounded and more abruptly truncated behind, the spine at the anterior end of the ventral surface longer, more curved and hook-like. Postpetiole more convex above and at the sides, its anteroventral tooth less acute. Gaster more slender; legs somewhat shorter.

Surface of body even smoother and more shining than in *damnosa*; mandibles, head and thorax very smooth, with very small, shallow, uniformly scattered punctures; pedicel and gaster with even smaller and more indistinct punctures.

Hairs pale yellowish, short, uneven and similar to those of *damnosa* but much less numerous. Pubescence shorter and more dilute, so that it does not dim the shining surface of the gaster, longer and more distinct on the tibiae and tarsi.

Deep castaneous; mandibles, clypeus, cheeks, antennae, pronotum usually, sides of epinotum, petiole and postpetiole, wholly or dorsally, sides and bases of the gastric segments, legs, except the middle portions of the femora of all the pairs and of the tibiae of the middle and hind pairs, yellowish brown. In some specimens the pronotum is also more or less castaneous above and

in some the fore legs are brownish yellow throughout. There is also considerable variation in the coloration of the petiole, postpetiole and gaster. In some specimens the petiole is entirely castaneous and only the node of the postpetiole is yellowish brown, or the yellowish brown at the bases of the gastric segments may be much reduced. The whole epinotum may also be castaneous in dark individuals.

Female. Length: 7.5-8.5 mm.

Head one and one fourth times as long as broad, subrectangular, slightly narrower in front than behind, with rather straight sides and feebly and broadly excised posterior border. Eyes and ocelli larger and more convex than in the worker. Mandibles short, with the external borders, abruptly geniculate at the base, the upper surface flattened, their apical borders with two sharp terminal and no basal teeth. Epinotum rounded, but with distinct, subequal base and declivity. Petiole one and two-third times as long as broad, the node somewhat depressed above, its sides rather bluntly submarginate, its ventral tooth large; postpetiole nearly as long as broad, less than twice as broad as the petiole. Gaster elongate. Wings narrow and short (6 mm.).

Sculpture much as in the worker, but mandibles striatopunctate and anterior portion of head more opaque and more densely punctate.

Pilosity and pubescence as in the worker.

Black; mandibles castaneous red; antennæ brownish yellow; the scapes sometimes slightly infuscated in the middle; clypeus, gula, pronotum and sutures of the thorax more or less castaneous; lateral borders of the ventral and dorsal sclerites of the gaster, tarsi and tibiæ brownish yellow; the middle and hind tibiæ infuscated in the middle of their extensor surfaces; femora blackish, with brownish tips and bases. Wings grayish hyaline, iridescent, not infuscated, with very distinct blackish veins and pterostigma.

Male. Length: 7.4-7.6 mm.

Head through the eyes as long as broad, eyes and ocelli larger than in *damnosa*; antennal scapes and first funicular joint, decidedly longer. Clypeus strongly carinate, slightly pro-

jecting in the middle, its sides impressed, their anterior borders bisinuate. Head behind the eyes narrowed but more convex and rounded than in *damnosa*. Epinotum somewhat longer and slightly more angular in profile, the ventral spine of the petiole much larger, nearly as large as in the female, the terminal dorsal segment of the thorax of a different shape, its posterior border produced as a narrow blunt point in the middle.

Shining, like the worker; even the mandibles and head very smooth and shining, the former striolate at the tips, punctate at the base, the head more densely punctate anteriorly as in the female.

Pilosity and pubescence much as in the worker.

Black; mandibles testaceous, infuscated at the base; antennæ fuscous, first funicular joint and tips and bases of scapes yellowish. Thoracic and abdominal sutures brown. Legs yellowish or pale brown, the femora, except their tips and bases, dark brown, the extensor surfaces of the hind tibiæ infuscated. Wings as in the female.

Described from many specimens from Kartabo, nesting, like the preceding species, in the petioles of large *Tachigalias*. Though closely related to *damnosa*, *arboris-sanctæ*, etc., this species seems to me to be specifically distinct. It also resembles *triplaridis* Forel and another species, which is found in *Triplaris surinamensis* near Kartabo and will be described elsewhere. Among my material there are also two varieties of *maligna* found nesting in some of the smaller *Tachigalias*; namely:

6.—*Pseudomyrma maligna* var. ***cholericæ*** var. nov.

Worker. Length: 3-3.5 mm.

Distinctly smaller than the typical form and similarly colored, but the lighter parts are more extensive and often of a more washed-out, sordid yellow, whereas the darker parts are more piceous or blackish. The clypeus, cheeks, petiole and postpetiole are pale yellow, as are also the thorax, except the base of the epinotum and a fuscous cincture in the mesonotal region. The gula and first gastric segment are apt to be paler than the

upper surface of the head. Except in size, this variety is not very sharply marked off from the type.

7.—*Pseudomyrma maligna* var. *crucians* var. nov.

Worker. Length: 3-3.5 mm.

Of the same size as the preceding variety but with a decided tendency to melanism, the whole thorax, pedicel and gaster being very dark brown or black in mature specimens. The middle of the scapes is infuscated and there may be occasionally pale markings on the node of the postpetiole and at the bases and sides of the gastric segments.

SUBFAMILY MYRMICINÆ.

8.—*Pheidole cramptoni* Wheeler subsp. *petiolicola* subsp. nov.

Soldier. Length: 2.3-2.6 mm.

Decidedly smaller than the type, which measures 4 mm., and differing as follows: head with the anterior corners even more decidedly turned outward, anterior gular teeth more slender and more acute; eyes slightly larger and distinctly convex (flat in the type); antennæ shorter, the tips of the scapes reaching the lateral borders of the head two-fifths of their length from the anterior corners (nearly half their length in the type). Thorax shorter and proportionally stouter; epinotal spines slightly shorter; postpetiolar node hemispherical and evenly convex above, without distinct anterior angles. Interrugal spaces on the anterior portion of the head less distinctly reticulate, so that the rugæ seem to be sharper. Surface of the body smoother and more shining. Pilosity quite as well developed as in the type. Color more vivid but the dark and light areas distributed in the same manner. Mandibles and clypeus red, with dark brown borders; anterior two-thirds of head clear ivory yellow, with a large elongate castaneous spot between the frontal carinæ; posterior two-thirds of head with a band extending forward on each side to the eye; the thorax, petiole, postpetiole and gaster rich castaneous, the first gastric segment, femora and pleuræ somewhat paler; frontal carinæ, tibiæ and antennæ reddish; tarsi yellowish.

Worker. Length: 1.4-1.6 mm.

Slightly smaller than the worker of the typical form, somewhat darker brown, with distinctly shorter antennæ, the scapes reaching back beyond the border of the head only to a distance equal to their greatest diameter. Head shorter, with more distinct posterior corners. Epinotal spines somewhat smaller.

Described from several specimens found with brood in a young *Tachigalia* petiole near Kartabo. The types of the species were collected by Dr. F. A. Lutz at Kaieteur, British Guiana.

9.—*Pheidole tachigaliae* sp. nov.

Soldier. Length: about 2 mm.

Head large, subrectangular, about one-quarter longer than broad, as broad in front as behind, with rather straight, subparallel sides and deeply, angularly excised posterior border, vertex with a large and rather deep impression, without a median groove between it and the frontal area where the head is uniformly convex. Gular teeth small and blunt. Eyes small and moderately convex, only about their own length distant from the clypeus. Frontal carinæ long, very far apart, curved, gradually diverging behind towards the posterior corners of the head, forming the inner borders of broad, shallow, but distinct scrobes for the antennæ. These scrobes and the frontal carinæ reach nearly to the posterior corners of the head. Mandibles stout and very convex, with a pair of blunt, apical teeth. Clypeus flat, ecarinate in the middle, its anterior border somewhat retuse, feebly sinuous in the middle and on each side. Frontal area rather large, triangular, shallow, with a small median pit. Antennæ slender, scapes curved, not incrassated or flattened but slightly enlarged distally, reaching nearly to the middle of the lateral borders of the head; antennal club somewhat shorter than the remainder of the funiculus, its two basal joints subequal, broader than long, together equal to the terminal joint; first funicular joint large; joints 2-6 small and transverse. Thorax very short, broad through the humeri which are prominent and subangular; promesonotal suture distinct but not impressed. In profile the pro- and mesonotum form together a high hemispherical mass, the mesonotum descending abruptly

behind to the pronounced mesoëpinotal constriction. Epinotum small and low, subcuboidal, broader than long, in profile with subequal base and declivity, the former straight and horizontal in profile, the latter very steep and concave, the spines very small and acute, scarcely longer than broad at their bases, directed backward and very slightly upward. Petiole slender, pedunculate, the node at its posterior end abrupt, anteroposteriorly compressed, its border moderately sharp, transverse and very feebly sinuate in the middle. Postpetiole slightly broader than the petiolar node, transverse, with rounded sides. Gaster oval, about as large as the head, convex above and below. Legs moderately long, with thickened femora and tibiæ.

Shining; mandibles and middle of clypeus smooth, the former with coarse, scattered, piligerous punctures; antennal scrobes reticulate; remainder of head longitudinally rugose, the rugæ rather straight and subparallel extending to the posterior corners, the interrugal spaces and posterior part of the head rather loosely reticulately rugose. Pro- and mesonotum smooth and shining above; pleuræ and epinotum more opaque, finely reticulate or punctate, as are also the ventral portions of the petiole and postpetiole; the nodes of the latter, the gaster and legs smooth and shining.

Hairs pale, golden yellow, erect, of uneven length, moderately abundant, rather uniformly covering the dorsal surface of the body. Pubescence almost absent.

Reddish yellow; gaster and appendages paler yellow, the former with a brown transverse band or cloud on the posterior portion of each segment. Mandibles red, with black borders; clypeal border also blackish. Impression on the vertex with a small, indistinct brown spot.

Worker. Length: 1-1.1 mm.

Head subrectangular, as long as broad, its sides rather rounded, its posterior border feebly but distinctly emarginate in the middle. Eyes rather large, flat, in front of the middle of the head. Mandibles with oblique, indistinctly denticulate apical borders. Frontal area obsolete. Clypeus rather convex in the

middle, the anterior border transverse, entire. Antennal scapes extending only very slightly beyond the posterior corners of the head. Thorax shaped somewhat as in the soldier, but the upper surface of the pro- and mesonotum more flattened. Epinotum longer than broad, with very minute, acute teeth. Petiole, postpetiole, gaster and legs resembling those of the soldier.

Mandibles smooth and shining, sparsely and indistinctly punctate. Clypeus, head, thorax, petiole and postpetiole subopaque, finely, densely and uniformly punctate; postpetiolar node slightly shining, gaster and legs very smooth and shining.

Pilosity like that of the soldier.

Brownish yellow; mandibles, appendages and gaster paler, yellow; the gaster without dark fasciæ.

Female (deälated). Length: 2.5 mm.

Head subrectangular, a little longer than broad, a little narrower in front than behind, with straight sides and posterior border. Frontal carinæ and antennal scrobes as in the soldier. Antennæ longer, the scapes reaching to the posterior third of the lateral borders of the head. Upper surface of head convex, without vertical impression. Ocelli rather far apart. Thorax elliptical, as broad as the head, the mesonotum and scutellum flat above. Epinotum very small and sloping, with small teeth. Petiole and postpetiole much as in the soldier; gaster larger and more elongate.

Sculpture, pilosity and color as in the soldier. There is a black spot on the ocellar triangle and the brown fasciæ on the gaster are broader and darker. Wing insertions blackish.

Described from specimens from a single colony with brood, taken August 23 at Kartabo from a petiole of a small *Tachigalia*.

This species is very peculiar on account of its small size and the antennal carinæ of the soldier and worker. In the latter particular it seems to approach *Ph. scrobifera* Emery of Costa Rica, but this species is decidedly larger, with much longer epinotal spines, quite different sculpture, etc.

10.—*Crematogaster* (*Orthocrema*) *limata* F. Smith
var. *palans* Forel.

A single colony with two deälated females, of what I take to be this variety, was found August 6, nesting in a small *Tachigalia* petiole at Kartabo. The workers are smaller than those of the typical *limata*, possibly because the colony was young. The antennal scapes are longer than in the type from Panama, but Forel mentions specimens from Pará Brazil, with longer antennæ.

The female measures nearly 6 mm. and is very deep brown, almost black, with the mandibles, legs and antennal clubs yellowish brown, the femora and tibiæ somewhat infuscated in the middle. Head subrectangular, broader than long, nearly as broad in front as behind, with straight, subparallel cheeks as long as the eyes. Antennal scapes extending a short distance beyond the posterior corners of the head. Thorax a little more than twice as long as broad; slightly narrower than the head, elongate elliptical from above, the nearly vertical epinotum with a pair of slender, pointed spines, longer than broad at their bases. Petiole subelliptical, truncated behind, its posterior corners distinctly angular; in profile twice as long as high, with nearly flat dorsal surface and a small tooth at the anteroventral margin. Postpetiole as broad as the petiole, somewhat depressed above, truncated behind. Gaster rather large, convex on the sides and above, pointed behind and emarginate anteriorly. Legs moderately slender. Surface of body very smooth and shining. Mandibles smooth, with a few small, scattered, piligerous punctures. Cheeks, sides of front, sides and declivity of epinotum longitudinally striate; mesonotum with coarse, scattered, piligerous punctures, the punctures on the gaster quite as sparse, but smaller. Hairs golden yellow, moderately abundant, erect, of uneven length, most numerous on the head, well-developed on the scapes and legs.

12.—*Crematogaster* (*Orthocrema*) *limata* F. Smith subsp
ludio Forel.

Two colonies with deälated females, taken August 10 and September 3 from petioles of young *Tachigalias* on the Cuyuni trail at Kartabo. The workers agree well with Forel's descrip-

tion and with specimens taken elsewhere in British Guiana by F. A. Lutz, F. M. Gaige and myself.

The female closely resembles that of the var. *palans*, but the head is longer, fully as long as broad and more narrowed anteriorly; the epinotal spines are shorter and stouter, not longer than broad at their bases, the posterior angles of the petiole are less acute, the mandibles are darker, the legs paler and more uniformly brownish yellow, the hairs on the body are whitish.

12.—*Crematogaster (Orthocrema) limata* F. Smith subsp.
parabiotica Forel.

This subspecies was not found nesting in the petioles but attending Membracids on the shoots of young *Tachigalias*. As I have shown in another paper (1921) it commonly lives in parabiosis with *Camponotus femoratus* (*vide infra* p. 167) in the peculiar "ant-gardens" attached to the trunks and branches of trees in the moist jungle. Both species of ants forage together and when found on *Tachigalia* the workers intermingle on the shoots and are very friendly to one another and to the Membracids but very pugnacious when interfered with.

13.—*Crematogaster (Orthocrema) delitescens* sp. nov.

Worker. Length 2-2.1 mm.

Head nearly circular, convex and rounded above, without distinct posterior corners; eyes moderately convex, situated just behind the middle of the sides, distant nearly twice their length from the anterior border of the head. Mandibles narrow, convex, their short apical borders with four small teeth. Clypeus convex in the middle, its anterior border slightly reflected, broadly and evenly rounded. Frontal carinae short, subparallel. Antennae slender; scapes extending a little beyond the posterior border of the head; funicular joints 2-8 as long as broad, ninth joint longer than broad; club slender, decidedly shorter than the remainder of the funiculus, its basal about two-thirds as long as its terminal joint. Thorax short; pro- and mesonotum together subtriangular from above, as broad as long; the pronotum flattened, marginate on the sides, the mesonotum very short and narrow, declivous.

strongly carinate on each side. Promesonotal suture feeble; mesoëpinotal suture distinct, but very short. Epinotum very short, sloping between the spines, which are slender, straight and acute, a little longer than the sides of the base, much shorter than their distance apart and directed backward and slightly upward. Petiole oblong, a little longer than broad, with parallel sides, constricted at the anterior end, the posterior corners projecting as minute tubercles. In profile it is about one and one-half times as long as broad, with very feebly convex dorsal and ventral surfaces and without a distinct anteroventral tooth. Postpetiole small, broader than long, the node entire, anteroposteriorly compressed. Gaster elongate triangular, tapering and pointed posteriorly, concave dorsally, convex ventrally, the anterior border of the first segment straight and transverse.

Shining: mandibles smooth, with a few small, scattered punctures. Head very smooth and shining, cheeks indistinctly striolate-reticulate. Clypeus with two sharp, longitudinal rugæ on each side, smooth and shining in the middle. Pronotum with a few longitudinal rugæ on the disc, abbreviated behind; mesonotum and epinotum subopaque, regularly and evenly reticulate, except the most posterior portion of the latter, which is smooth in the middle; pronotum on the sides, petiole and gaster smooth and shining; postpetiole with short longitudinal furrows above.

Hairs whitish, long, sparse, rather blunt but not clavate on the dorsal surface of the body; anterior surfaces of antennal scapes with a row of long, rather flexuous hairs. On the legs the hairs are very short, appressed and rather sparse.

Piceous brown; head and gaster darker; base of scape and of funiculus paler; mandibles and tarsi brownish yellow.

Female (deälated). Length 4.7 mm.

Head subrectangular, nearly as broad as long, and nearly as broad in front as behind, with rounded posterior corners and straight, parallel cheeks. Eyes at the middle of the sides, elongate. Antennal scapes scarcely reaching to the posterior corners of the head. Thorax from above elongate elliptical, decidedly narrower than the head; mesonotum one and one-third times as long as broad; epinotum abrupt, without base or

declivity, the spines of the worker represented by blunt angles on the sides. Gaster elongate, with subparallel sides, the first segment subrectangular, nearly as long as broad.

Smooth and shining, the epinotum between the angles reticulate, the node of the postpetiole smooth.

Hairs decidedly shorter than in the worker, more abundant on the head and thorax than on the abdomen.

Color much like that of the worker, but the thorax as dark as the head and gaster, except the anterior portion of the pronotum, the prescutellum and epinotum which are more castaneous.

Described from a female and several workers constituting a single small colony found July 24 nesting in the petiole of a young *Tachigalia* growing on the Cuyuni trail, near Kartabo.

This form approaches *C. sumichrasti* Mayr in many particulars but is, I believe, quite distinct, especially in the shape of the head, mesonotum and petiole, in the pilosity of the legs, color, etc. It also recalls forms like *limata* Smith, *brasiliensis* Mayr and *lutzi* Forel. The antennal club might be regarded as indistinctly three-jointed. The female is very small compared with the corresponding phase of the *limata* group. Mayr's *laevis* is also a closely allied form, but the petiole and median funicular joints of this species are shorter, the pro- and epinotum smoother, the color is paler, etc. I have three workers taken by Mr. F. M. Gage at Castries, St. Lucia, W. I., which agree very closely with the types of *delitescens*.

14.—*Solenopsis altinodis* Forel

(Fig. 15, a-c).

Worker. Length 1.8-2.1 mm.

Head about one and one-sixth times as long as broad, subrectangular, as broad in front as behind, with straight posterior and very feebly convex sides. Eyes consisting of about a dozen ommatidia, well in front of the median transverse diameter of the head, and about four times their diameter from the anterior corners. Mandibles with evenly convex external borders, the

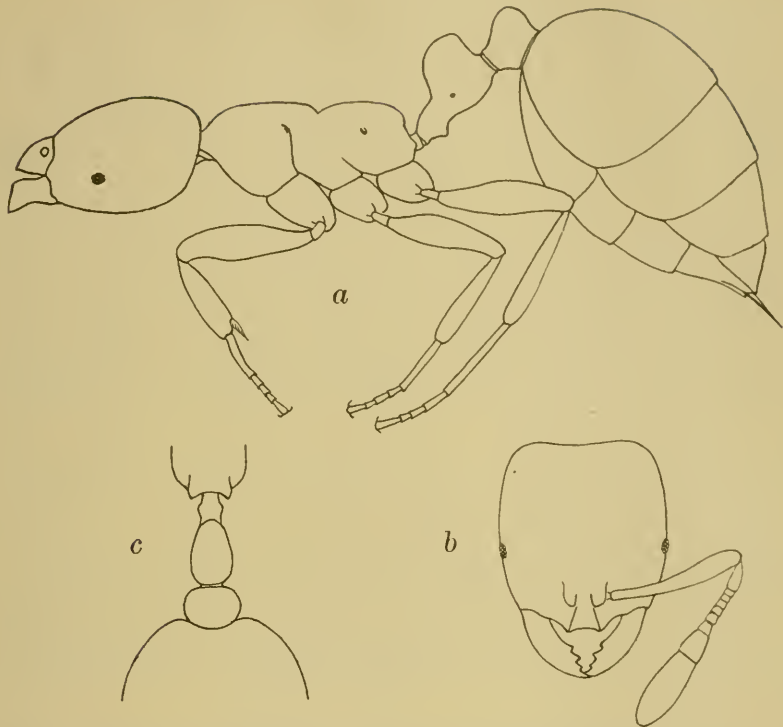


FIG. 15. *SOLENOPSIS ALTINODIS* FOREL, WORKER.

a, lateral view of body; b, head from above; c, petiole and post petiole from above.

apical borders oblique, with four distinct teeth. Clypeus projecting, with the usual pair of sharp carinæ. These do not end at the border in sharp teeth, but in small, rather blunt projections. Lateral denticles lacking. Frontal area distinct, impressed. Antennal scapes reaching nearly to the posterior fourth of the head. Funiculi about as long as the two-jointed club; joints 2-7 broader than long, 2-6 being fully twice as broad as long; basal joint of club a little longer than broad, somewhat less than a third as long as the terminal joint. Thorax slender; pronotum with subrectangular humeri and straight subparallel sides, in profile evenly and feebly convex above. Mesoëpinotal constriction short but pronounced; epinotum long, its base feebly convex, indistinctly bidenticulate behind and nearly twice as long as the

declivity which is abrupt and distinctly marginate on the sides. Petiole in profile very large, with distinct peduncle and longer abrupt node, which is much higher than the epinotum, higher than long, in profile subrectangular, with vertical anterior and posterior borders and subhorizontal superior outline rounded at each end. The ventral surface is convex behind and concave in front, with an angular projection but no distinct tooth near the anterior end. Seen from above the petiole is twice as long as broad, gradually enlarged behind, so that the node is seen to be much compressed laterally. Postpetiole in profile much higher than long, the summit of its node rounded, not attaining the height of the petiole. From above the postpetiole is somewhat broader than the petiole and slightly broader than long. Gaster large, the anterior border of the first segment somewhat concave. Sting long and powerful. Legs moderately long and slender.

Smooth and shining, with minute, scattered, indistinct, piligerous punctures; cheeks and sides of front finely striate.

Hairs pale yellowish, bristly, of uneven length, moderately abundant, erect or suberect, rather long on the body, shorter on the antennæ and legs.

Dull reddish brown; head and especially the gaster dark brown; mandibles, clypeus, cheeks, antennæ and legs yellow; middle portions of scapes, femora and tibiæ more or less infuscated.

I have redescribed this species, originally described from Venezuela and Trinidad, from many specimens taken at Kartabo. It does not live in the petioles of *Tachigalia* but in the ground and often enters those inhabited by the *Coccidotrophus* and *Ennausibius* and destroys their colonies (*vide supra* p. 82). I was never able to secure the sexual forms and brood. The worker is readily distinguished from the numerous other South American species of *Solenopsis* by the peculiar, high, compressed petiolar node, marginate and subbidentate epinotum, nearly unarmed clypeus and unusual coloration.

15.—*Solenopsis helena* Emery subsp. ***hermione*** subsp. nov.

Worker. Length 1.6-1.8 mm.

Differing from the typical *helena* of Chile in its somewhat greater size (*helena* measures 1.3-1.5 mm.), in having the head slightly shorter, with more rounded sides, joints 2-7 of the funiculus very slightly longer as compared with their width, so that the club is shorter in proportion to the remainder of the funiculus. The epinotum is evenly convex, without indications of an angle between the base and declivity, and the summit of the petiolar node is not so thick in profile. The eyes, which are not figured or described by Emery for the type, are very small and consist of only four ommatidia.

Female. Length 3.3 mm.

Differing from the typical *helena* in color, being yellow, like the worker, instead of pale brown, with the ocellar triangle, a broad dorsal band and a large ventral spot on each gastric segment dark brown. Each of these spots and bands is emarginate posteriorly. In old, deälated females the wing-insertions are also dark brown. Wings gray, rather opaque, with distinct brown veins and dark brown pterostigma.

Described from numerous specimens taken from several colonies found in the petioles of young *Tachigalias* along the Cuyuni trail at Kartabo. It nests also in the hollow twigs of various other plants.

16.—*Solenopsis helena* subsp. ***ultrix*** subsp. nov.

Worker. Length 1.6-1.8 mm.

Of the same size as the preceding subspecies but differing in having the head still broader in proportion to its length and with more rounded sides and posterior corners, the posterior margin straight or even slightly convex. The antennal scapes are distinctly longer, attaining the posterior fourth of the distance between the eyes and posterior corners of the head. Color pale piceous brown; tarsi and funiculi, except the clubs, pale whitish yellow; gaster dark brown, with the anterior and posterior borders of the segments yellowish.

Female (deälated). Length nearly 4 mm.

Distinctly larger than the female of *hermione* and of a different color, being castaneous brown; mandibles and clypeus pale reddish brown; antennæ and legs pale yellow, with the antennal clubs and scapes, femora and tibiæ, except their bases and tips, infuscated. Piligerous punctures on the head more distinct than in *hermione*. Epinotum in profile scarcely angular, but rounded as in that form and the typical *helena*.

Described from numerous workers and a single female taken from two colonies inhabiting the petioles of young *Tachigalias* at Kartabo. I have attached this form to *helena* though the shape of the head and the length of the antennal scapes are different. The other characters, however, such as the shape of the thorax and petiole, the sculpture and pilosity are so similar that it can hardly be regarded as a distinct species.

17.—*Leptothorax* (*Goniothorax*) *echinatinodis* Forel subsp.
aculeatinodis Emery var. ***pleuriticus*** var. nov.

Worker. Length 2.2-2.5 mm.

Differing from the typical *aculeatinodis* in the following particulars: Head very dark brown or piceous, like the gaster; whole upper surface of the thorax ivory or brownish yellow, only the mesopleuræ and sides of the epinotum dark brown. Petiole pale, like the thoracic dorsum; postpetiole brown, paler than the gaster; scapes, base of funiculi, tarsi, tibiæ and bases and tips of femora pale ivory yellow, remainder of femora dark brown, as are also the clubs of the antennæ. Pilosity abundant, long, erect, present also on the scapes and legs, the hairs being obtuse but neither stout nor clavate. Rugæ of the petiole somewhat concentric. Tubercles on the petiole and postpetiole small and blunt. Epinotal spines long, slender, curved downward and directed upward, backward and outward, slightly shorter than the base of the epinotum.

Female. Length about 3 mm.

Head smooth and shining only in the middle between the frontal carinæ and imaginary lines continuing them to the posterior border of the head; lateral to these lines the surface

is coarsely, loosely and longitudinally rugose, with reticulate interrugal spaces. Thorax subopaque, its sides obscurely longitudinally rugose; mesonotum and scutellum longitudinally and rather regularly rugulose, the former somewhat smooth anteriorly. Epinotum punctate-rugulose, the declivity regularly transversely rugulose. Pilosity as in the worker. The spines of the epinotum are reduced to two stout teeth, as long as their width at the base. Petiole and postpetiole nearly smooth, except for their tubercles, which are decidedly smaller than in the worker. Gaster elongate elliptical, transversely truncated anteriorly. Brownish yellow; upper surface of head, except its posterior corners, antennal clubs, scutellum, postscutellum, sometimes a posteromedian spot on the mesonotum, femora, except their bases and gaster, except the anterior corners of the first segment, dark brown. Wings whitish hyaline, with very pale veins and distinct brown pterostigma.

Male. Length 2.2 mm.

Head distinctly longer than broad, with distinct posterior corners, the posterior orbits very near the median transverse diameter. Ocelli small. Cheeks very short. Clypeus with arcuate, projecting anterior border. Mandibles small, with oblique 3- or 4-toothed apical borders. Antennæ slender, 12-jointed; scapes reaching nearly to the posterior corners of the head; first funicular joint longer than broad, not broader than the remaining joints, which are somewhat fusiform; fifth joint long, representing two incompletely separated joints. Thorax long and slender, humeri distinctly angular; mesonotum with Mayrian furrows; epinotum low and sloping, moderately convex, without distinct base and declivity. Petiole smooth and slender, the node represented by a swelling in the middle, the sides with feeble traces of the lateral tubercles of the worker and female; postpetiole smooth, without tubercles, nearly as long as broad, broader behind than in front and distinctly broader than the petiole. Gaster and legs slender.

Head and thorax finely and densely punctate; vertex and mesonotum smooth and shining, as are also the pedicel, gaster and appendages.

Hairs whitish, short, less abundant and more delicate than in the worker and female; the longer hairs on the femora and tibiæ reclinate.

Piceous brown; head darker and more blackish; mandibles, antennæ, legs, genitalia and incisures of gaster pale brownish yellow. Wings as in the female.

Described from specimens belonging to a single colony inhabiting the petiole of a young *Tachigalia* at Kartabo (Sept. 3).

18.—*Leptothorax (Goniothorax) umbratilis* sp. nov.

Worker. Length 1.7-2 mm.

Head subrectangular, very slightly longer than broad and slightly broader behind than in front, with nearly straight posterior border and very feebly convex sides; the eyes moderately convex, their posterior orbits at the median transverse diameter of the head. Mandibles convex, their apical borders with five or six small teeth. Clypeus distinctly concave in the middle, without carinæ, the anterior border entire and transverse in the middle, large but rounded and lobular. Mesoëpinotal impression distinct but shallow. Frontal groove absent. Antennæ 11-jointed; scapes reaching to within a distance equal to their greatest diameter of the posterior corners of the head; second funicular joint as long as broad, joints 3-7 distinctly broader than long; two basal joints of club subequal, longer than broad, together shorter than the enlarged terminal joint. Thorax shaped much as in *echinatinodis*, flattened above, marginate on the sides, with bluntly acuminate anterior humeral angles; lateral mesonotal angles rather acute, those at the base of the epinotum quite as large but rounded and lobular. Mesoëpinotal impression distinct but shallow. Epinotal spines short, stout and curved, not longer than their distance apart at the base, directed upward, backward and outward, much shorter than the base of the epinotum. Petiole about one and one-half times as long as broad, slightly broader behind than in front, with tubercles arranged as in *echinatinodis* but much smaller. In profile the petiole is longer than high, the node rather low, the peduncle short and indistinct; the ventral surface concave, with a small, downwardly directed tooth at the anterior end. Postpetiole broader than long, broader

than the petiole, high and convex above; its sides with two pairs of small tubercles, the anterior pair scarcely visible. Gaster and legs as in *echinatinodis*.

Mandibles shining, very finely striatopunctate. Clypeus nearly smooth in the middle, shining, longitudinally rugulose on the sides. Head, thorax and pedicel subopaque, the head densely and finely reticulate-rugulose, the rugules longitudinal; thorax with similar sculpture, the rugules on the pronotum somewhat more pronounced. Postpetiole with a few longitudinal rugæ. Gaster shining, the basal half of the first segment very finely shagreened and punctate, so that it appears slightly opaque or sublucid.

Hairs white, abundant, short, clavate and erect on the dorsal surface of the body. Such hairs are lacking, however, on the appendages where they are replaced by short, appressed pubescence.

Brown; upper surface of head, mesonotum, mesopleuræ, epinotum, nodes of pedicel and antennal clubs dark brown; mandibles, clypeus, scapes and tarsi yellow; pronotum and gaster brownish yellow.

Female (deälated). Length about 3 mm.

Resembling the worker. Pronotum more rectangular, its anterior border very straight and sharp, the corners acute. Mesonotum and scutellum flat; base of epinotum convex, bluntly angled on each side anteriorly, declivity longer, abrupt and concave, the spines of the worker represented by small, blunt angles. Petiole and postpetiole similar to those of the worker, but the tubercles on the sides of the latter longer and more acute. Gaster longer.

Sculpture much as in the worker; mesonotum as finely and regularly rugulose-punctate as the head; scutellum densely punctate; base of epinotum transversely rugulose-punctate. Gaster very finely striolate-punctate at base of first segment.

Pilosity like that of the worker.

Yellowish brown; mandibles, clypeus, tarsi and gaster yellow; ocellar region, scutellum and mesopleuræ dark brown.

Described from several workers and a female taken from a single colony nesting in a *Tachigalia* petiole at the Penal Settlement, near Bartica, August 10.

This species, though related to *L. tristani* Emery of Costa Rica, appears to be distinct both from it and the various forms of *echinatinodis* Forel in the structure of the clypeus, and petiole, in sculpture and coloration.

19.—*Allomerus octoarticulatus* Mayr.

Of this extraordinary little ant a single small colony with pupæ was found in a young *Tachigalia* on the Puruni trail at Kartabo. This I believe to be a very exceptional occurrence, since the species is the most typical and abundant tenant of another myrmecophyte, *Cordia nodosa*, so that I shall describe its peculiar habits in another publication in connection with the other ants which inhabit the stem-swellings of that plant and go to make up what may be called the "Cordia biocoenose."

20.—*Atta cephalotes* L.

I include this well-known leaf-cutting ant in the *Tachigalia* biocoenose, because on one occasion I found that it had completely defoliated some of the young *Tachigalias* growing near the Penal Settlement. The petioles of these plants were either empty or contained recently fecundated *Pseudomyrma damnosa* queens that had only begun to lay eggs, so that the plants were quite unprotected.

SUBFAMILY DOLICHODERINÆ.

21.—*Dolichoderus attelabooides* Fabr.

Workers of this singular ant were occasionally seen attending Membracids on the shoots of young *Tachigalias* growing along the Puruni trail, at Kartabo. The ant is more common in attendance on Membracids feeding on the terminal shoots of various Melastomaceæ.

22.—*Azteca traili* Emery.

A few workers and pupæ belonging to an incipient colony of this species were taken during September from a *Tachigalia* petiole at Kartabo. The species has been recorded by Forel and Emery from other myrmecophytes (leaf-sacs of *Tococa guianensis* and other Melastomaceæ, root-stocks of *Polypodium*).

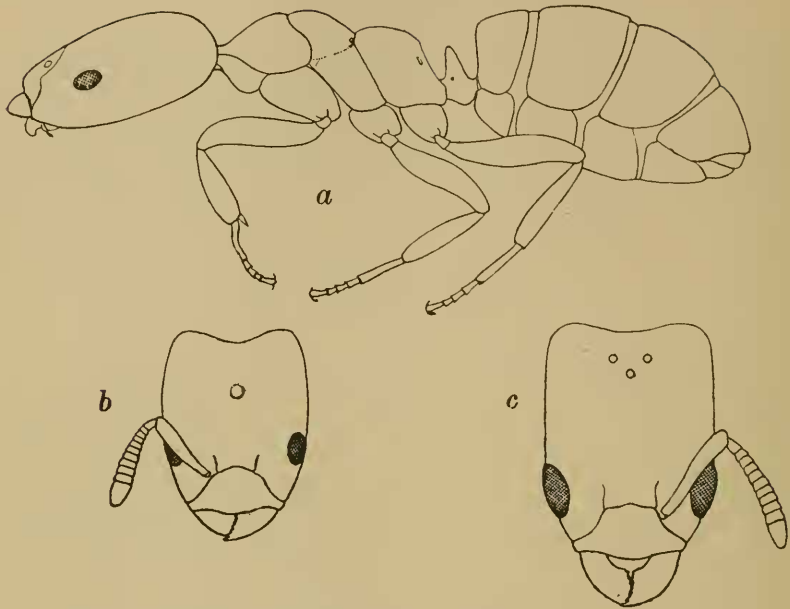
23.—*Azteca foveiceps* sp. nov.

(Fig. 16, a-c)

Worker. Length 1.7-2.2 mm.

Closely related to *A. schumanni* Emery; practically monomorphic. Head flattened, about one and one-fifth times as long as broad, distinctly narrower in front than behind, with rather straight sides and excised posterior border. In the middle of the head above a small, shallow impression, or fovea. Eyes small, flat, less than twice their length from the anterior corners of the head. Mandibles curved, their apical borders with nine teeth, alternately larger and smaller. Clypeus feebly convex behind, flattened in front, with nearly straight, feebly bisinuate anterior border. Frontal area obsolete; frontal groove absent; frontal carinæ very short. Antennæ short and thick; scapes enlarged and somewhat flattened at the tip, reaching only to the middle of the distance between the posterior orbits and the posterior corners of the head; joints 2-10 of funiculi very short and transverse, the more basal fully three times as broad as long. Thorax short and stout, about twice as long as the transverse diameter of the pronotum. Sutures, especially the mesoëpinotal, pronounced and impressed; mesonotum as long as broad, convex but rising very little above the pronotum. Epinotum rounded subcuboidal, the base longer than the declivity, the former horizontal, the latter steep. Petiole small, the node high, squamiform, inclined forward, elliptical from behind, its border narrowed above, only moderately sharp in profile. Gaster elongate elliptical, the first segment short, with a deep impression anteriorly for the accommodation of the petiole. Legs stout.

Shining; very finely but not densely punctate; the punctures on the mandibles more distinct.

FIG. 16. *AZTECA FOVEICEPS* SP. NOV.

a, worker, lateral view; b, head from above; c, head of female.

Body and appendages covered with rather long, grayish, appressed pubescence, not sufficiently dense to obscure the shining surface; hairs yellowish, erect, rather short, abundant on the thorax, sparser on the head and gaster, short on the appendages.

Piceous black; borders of gastric segments paler; mandibles red; tarsal joints 2-5 and sides of clypeus yellowish brown; antennæ dark brown, their tips blackish, their insertions and the mouth yellowish.

Female. Length 4.5-4.8 mm.

Head decidedly longer and more nearly oblong than in the worker, about one and one-half times as long as broad, the sides straight and parallel, narrowed only near the clypeus. Eyes large, feebly convex, their distance from the anterior corners of the head less than half their length. Antennal scapes reaching

only one-third the distance from the eyes to the posterior corners of the head. Thorax broader than the head; mesonotum convex; epinotum rounded, convex, without distinct base and declivity. Petiole thicker, more erect, with much blunter superior border than in the worker.

Sculpture, pilosity and color as in the worker but the erect hairs are shorter and less abundant on the thorax. Wings distinctly and uniformly infuscated, with strong, dark brown veins and pterostigma.

Male. Length 1.6-1.8 mm.

Head through the very large eyes a little longer than broad, with extremely short cheeks, growing narrower behind the eyes, where the sides are nearly straight. Mandibles very small, atrophied, bluntly acuminate, edentate. Clypeus short, convex in the middle, with broadly and evenly concave anterior border. Scapes very small and short, scarcely more than twice as long as broad, constricted basally, somewhat swollen apically; first funicular joint globose, broader than the scape, succeeding joints somewhat longer than broad, growing successively shorter and narrower, longer at the tip. Thorax shaped much as in the female, but the epinotum more sloping; petiole broader, erect with its superior border blunter than in the worker but more acute than in the female. Legs rather slender.

Sculpture as in the worker and female; pubescence and especially the pilosity much shorter and sparser; appendages without erect hairs; antennal funiculi beyond the first joint clothed with fine, dense, erect, white hairs.

Dull, dark piceous brown; head darker; mouthparts and genitalia sordid yellowish. Wings as in the female.

Described from numerous specimens taken at Kartabo from the petioles of large, vigorous *Tachigalia* trees.

This species is so close to Emery's *schumanni*, that it may prove to be merely a subspecies of that form which was taken on the Rio Guainia, an affluent of the Cassiquiare, in Venezuela,

in the leaf-sacs of a Rosaceous myrmecophyte, *Hirtella guainiæ* Spruce (ex Hooker fil.).¹

Emery saw only workers and a few very imperfectly preserved females of *schumanni*. His figures show, however, that the heads of both are decidedly shorter than in *foveiceps*, that the head of the worker is not so much narrowed anteriorly and that the antennæ are longer, with the median joints of the funicle less transverse, and the petiole of the worker more erect and with a smaller node.

SUBFAMILY FORMICINAE.

24.—*Brachymyrmex heeri* Forel.

Colonies of this minute honey-yellow ant with brood were repeatedly found in the petioles of young *Tachigalias* along the trails near Kartabo. More frequently it nests in dead stems of a very common Rubiaceous weed (*Spermacoce verticillata*), or in the twigs of bushes. It also occurs under the bark of old logs.

25.—*Brachymyrmex heeri* var. *basalis* var. nov.

Worker. Honey yellow, like the type, except the first gastric segment, which is black.

¹ This plant is cited by Emery in his Azteca monograph (1893) as "*Chrysobalanea hirtella* Guainiæ Hooker fil. but the "Index Kewensis" gives the name as cited above. It may be of interest to quote in this connection Spruce's remarks (1908, p. 395) on another species of *Hirtella* with ant-inhabited leaf sacs: "Examples of sac-like ant-dwellings exist in the leaves of plants of other orders, so like those already described in Melastomes, that it is scarcely worth while to do more than indicate some of the species. The solitary instance known to me in Chrysobalans is that of *Hirtella physophora* Mart., a slender arbuscle growing just within reach of inundations in the forest about the mouth of the Rio Negro. The distichous, oblong, apiculate leaves are nearly a foot long, and at the cordate base have a pair of compresso-globose sacs tenanted by ants. On cutting open the sacs I was rather surprised to find them lined with cuticular tissue and hairs, just like the underside of the leaf; which seems to show that they are produced by a recurvation of the alæ of the leaf, through the ants nestling at first (Aphis-like) under the leaf and causing it to become bullate, and that the recurved margins have at length reached and coalesced with the midrib so as to form a pair of sacs." The fanciful explanation in the concluding sentence was evidently in part responsible for the unfortunate refusal of the Linnean Society to publish Spruce's very valuable paper when it was presented in 1869.

A single small colony with brood inhabiting the petiole of a small *Tachigalia* on the Puruni trail at Kartabo.

26.—*Camponotus (Myrmothrix) femoratus* Fabr.

On several occasions I found this very pugnacious ant attending Membracids on the young terminal shoots of small *Tachigalias* along the Puruni trail at Kartabo. As a rule the *femoratus* workers were accompanied by the workers of *Crematogaster limata* subsp. *parabiotica*. These two ants regularly live in parabiosis in the ant-gardens on the trees of the jungle, as I have shown in a previous paper (1921).

27.—*Camponotus (Myrmobrachys) zoc* Forel

This very active but timid species occasionally nests in the petioles of young *Tachigalias* but is more frequently found in the cavities of the dead twigs of other trees.

28.—*Camponotus (Myrmobrachys) pittieri* Forel var.
pœnalis var. nov.

Worker. Of a darker, more piceous brown color than the type from Costa Rica, the gaster being concolorous with the thorax and legs and not paler and more yellowish; the darker brown area on the top of the head is deeper and more extensive. The erect pilosity on the upper surface is distinctly sparser and the hairs on the legs and especially on the scapes are much more oblique, or reclinate. The base of the epinotum is more sloping so that the thorax is distinctly lower behind than in the type.

Female. Length about 6.5 mm.

Darker than the worker; front as well as the vertex of the head and also the scutellum, pleuræ and posterior portion of epinotum, dark chocolate brown; mandibles red, with black apical borders. Antennal funiculi not infuscated at the tip. Mesonotum rather flat above. Head, pro- and mesonotum subopaque, more strongly punctate than in the worker; scutellum, postscutellum and epinotum distinctly shining. Petiole with broader, more trans-

verse superior border when seen from behind, more acute in profile. Wings faintly infuscated, with light brown veins and conspicuous dark brown pterostigma. Pilosity similar to that of the worker but somewhat shorter, and the hairs on the funiculi and legs more appressed.

Described from specimens from a single colony found nesting with larvæ and cocoons in a petiole of a young *Tachigalia* at the Penal Settlement, near Bartica, August 10. This ant is evidently rare or very local, as I did not again take it in the vicinity of the Tropical Laboratory.